



Tropical Storm Allison Recovery Project

Full Mitigation Best Practice Story

Harris County, Texas

Harris County, TX - Tropical Storm Allison descended on southeast Texas in June of 2001 and dumped 37 inches of rain in 12 hours, claiming 23 lives. Portions of major highways were submerged, 30 counties affected, businesses were destroyed and 1,611 damaged, 155 schools sustained water damage and over 35,000 homes were affected by flooding. The Texas Medical Center campus and buildings sustained damages that are expected to exceed \$2 billion. Tropical Storm Allison is now the flood of record for the Houston metropolitan area and Harris County.



Harris County is subject to frequent severe flooding from tropical storms and hurricanes. Historically, the county experienced 16 major floods from 1836 to 1936, some which caused deaths and flooded downtown Houston. In 1935, the Texas State Legislature established the Harris County Flood Control District (HCFCD) to have sole responsibility for the management of storm water and its results. Funding for the district is through a dedicated property tax.

The HCFCD has employed many structural mitigation measures such as channelization, detention facilities, bridge elevations and construction of levees and/or flood walls. Since 1994, the district has been aggressively pursuing acquisition and buyout as their major non-structural mitigation measure. Over the last 12 years the district has purchased 440 properties (vacant lots and houses) at a cost of \$40 million. Their pro-active buyout program continues both during a federal declaration and between flooding periods. Their goal is to move people out of harms way and allow the land to return to a natural state. Their process has been fine tuned to a fast track approach and because it is on-going, the response time and potential for increased costs have been greatly reduced. Additionally, the district seeks partners to share in project costs. Active partners, for example, are the US Army Corps of Engineers (USACE), Texas Parks and Wildlife Department, FEMA Hazard Mitigation Grant Program (HMGP), City of Houston Parks and Recreation Department, and the Department of Housing and Urban Development (HUD).

A study done by the USACE in 1998 looked at options of providing flood control to a section of land in the floodplain at the San Jacinto River and Cypress Creek in the Northwest section of Harris County. The study concluded that structural methods could not be economically justified and determined that non-structural methods, specifically buyout, would meet all the objectives. The benefit to cost ratio for the removal of 40 structures is 1:4. This is a direct benefit. Additionally, there are the indirect benefits of a buyout, i.e., cost of search and rescue, frequent repairs, temporary residences, family disruption, mental and physical health problems.

Since its creation, the district has completed structural and non-structural flood control projects at a cost of approximately \$4 billion. The boundaries of the district encompass 1,756 square miles, 22 watersheds and more than three million inhabitants, including the City of Houston which is the fourth largest city in the United States.

This same area was flooded by Allison; however, damages were significantly less. HCFCD was awarded HMGP money to buy out over 600 substantially damaged homes following the storm.

Standard Homeowner's insurance policies do not cover flood damage. The National Flood Insurance Program makes Federally backed flood insurance available to homeowners, renters, and business owners in participating communities.

Activity/Project Location

Geographical Area: **Single County (County-wide)**

FEMA Region: **Region VI**

State: **Texas**

County: **Harris County**

Key Activity/Project Information

Sector: **Public**
Hazard Type: **Flooding**
Activity/Project Type: **Acquisition/Buyouts**
Activity/Project Start Date: **01/1980**
Activity/Project End Date: **Ongoing**
Funding Source: **Hazard Mitigation Grant Program (HMGP); Local Sources; Other Federal Agencies (OFA)**
Funding Recipient: **Local Government**
Funding Recipient Name: **Harris County Flood Control District**

Activity/Project Economic Analysis

Cost: **\$5,800,000.00 (Actual)**

Activity/Project Disaster Information

Mitigation Resulted From Federal Disaster? **Unknown**
Value Tested By Disaster? **Yes**
Tested By Federal Disaster #: **No Federal Disaster specified**
Year First Tested: **2001**
Repetitive Loss Property? **Unknown**

Reference URLs

Reference URL 1: <http://www.fema.gov/business/nfip/>
Reference URL 2: <http://www.txdps.state.tx.us/dem/>

Main Points

- Employed many structural mitigation measures such as channelization, detention facilities, bridge elevations and construction of levees and/or flood walls
- Since 1994, the district has been aggressively pursuing acquisition and buyout as their major non-structural mitigation measure. Over the last 12 years the district has purchased 440 properties (vacant lots and houses) at a cost of \$40 million.
- The area was flooded by Tropical Storm Allison; however, damages were significantly less. Presently, HCFCD has been awarded HMGP money to buy out over 600 substantially damaged homes as a result of Tropical Storm Allison.



Floodwaters inundate freeways and streets in downtown



New open space is gradually returning to nature and flood waters are no longer a threat.